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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,805	11/12/2003	Erol Bozak	09700.0032-00	6946

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER  
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WASHINGTON, DC 20001-4413

EXAMINER
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KAWSAR, ABDULLAH AL

ART UNIT	PAPER NUMBER
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2109

MAIL DATE	DELIVERY MODE
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07/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/706,805

Applicant(s)

BOZAK ET AL.

Examiner

Abdullah-Al Kawsar

Art Unit

2109

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/12/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____  |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :03/11/2004, 04/23/2004, 06/14/2005.

### **DETAILED ACTION**

1. Claims 1-20 are pending.

#### ***Priority***

2. The provisional priority date of 07/28/2003 for the application has been accepted.

#### ***Drawings***

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Specification***

4. The disclosure is objected to because of the following informalities: in specification "IPC" should spell out.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 7-14 are rejected under 35 U.S.C. 112, second paragraph, as being unclear and indefinite to particularly the subject matter which applicant regards as the invention. Claim 7 recites, ***“sending a list of available computation resources”*** but does not disclose specifically what type of request is being send and who is receiving also in line 11 ***“to a second service is the first service has no information”*** is not clear in terms of which first and second service its being send to. Examiner interprets the claim as a set of networked computers sending request to a second set of resources.

7. Claims 8-14 are dependent claims of claim 7. Therefore they are rejected under the same rational.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Design and Evaluation of a Resource Selection Framework for Grid Applications” by Chuang Liu(Liu) in view of “ Nimrod/G: An Architecture for a Resource Management and Scheduling System in a Global Computational Grid” by Rajkumar Buyya(Buyya) and in view of “The Cactus Worm: Experiments With Dynamic Resource Discovery and Allocation In A Grid Environment” by Gabrielle Allen(Allen) .

As per claim 1, Liu discloses:

*- in a network, responding to a request for a computational resource available for computing a task by sending a list of available computational resources* ( page 2 col 1 lines 32-36, “The resource selector locates sets of resources that meet user requirements, evaluates them based on specified performance model and mapping strategies, and returns a suitable collection of resources, if any are available.”)

*- receiving a selection of a computational resource for reservation* ( page 3 col 2 lines 19-27, “The algorithm repeatedly removes the “best” resource remaining..... that satisfies the user’s request”)

However Liu does not specifically disclose, *sending a reservation number for the selection.*

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On the other hand Buyya discloses:

- *if the selection of the computational resource is available for computing the task, reserving the selection and sending a reservation number for the selection* ( page 3 col 2 lines 19-23, “the user can negotiate for resources in the grid and find out if the job can be performed. The system can employ resource reservation or a trading technique in order to identify suitable resources”)

Therefore, it would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Buyya into the method of Liu to have a reservation number for the selected resources. The modification would have been obvious because one of the ordinary skills of the art would identify the selected reserved resources for better resource allocation and management over the network.

Neither Liu nor Buyya specifically disclose the claimed, *sending the request to a different portion of the network if computational resources are unavailable.*

On the other hand Allen discloses:

- *sending the request to a different portion of the network if computational resources are unavailable for computing the task* ( page 2 col 1 lines 8-10, “security, resource discovery, and resource access and provides new resource locator and migrator services.” And page 5 col 2 lines 25-28, “One set of thorns provides a migration module for any Cactus application, which allows a user to transfer the simulation state by a checkpoint file or checkpoint stream from one resource to the next.”)

Therefore, it would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Allen into the combined method of Buyya and Liu to send request in different portion of the network for available resources. The modification would have been obvious because one of the ordinary skills of the art would find additional resources to compute the assigned task if it's not available in the primary resources.

As per claim 2, the rejection of claim 1 incorporates and further Liu discloses:

**- wherein the list of available computational resources comprises network addresses of the available computational resources** ( page 5 col 1 lines 16-25) machine DNS address is the machine network address.

As per claim 3, Lui discloses all the elements of claim 3 except, **reserving the selection further comprises assigning the reservation number.**

On the other hand Buyya discloses:

**- wherein reserving the selection further comprises assigning the reservation number** ( page 3 col 2 lines 22-23, "The system can employ resource reservation or a trading technique in order to identify suitable resources.") having resource reservation to identify inherently means having a reservation number or value.

Therefore, it would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Buyya into the method of Liu to have a reservation number for the selected resources. The modification would have been obvious because one of the ordinary skills of the art would identify the selected reserved resources for better resource allocation and management over the network.



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As per claim 4, the rejection of claim 1 incorporates and further Liu discloses:

**- waiting a predetermined time period for the computational resource to begin computing the task; and if the predetermined time period is expired and the computational resource has not begun computing the task, then freeing the computational resource for subsequent reservation for computing a second task** ( page 4 col 2 lines 11-15, “An asynchronous request specifies a request lifetime value; the RSS responds if and only if a resource set that satisfies the specified ClassAd becomes available during the specified lifetime.”) assigned lifetime is the predetermined time for the resources and allowed to execute only in the assigned timeslot and inherently becomes available to any other resources if the timeslot expires.

As per claim 5, the rejection of claim 1 incorporates and further Liu discloses:

**- wherein responding to the request further comprises comparing requirements for computing the task with specifications of the available computational resources** ( page 3 lines 29-36, “It checks whether the candidate ClassAd..... characteristics (as long as these characteristics can be described by expressions).

As per claim 6, the rejection of claim 5 incorporates and further Liu discloses:

**- further comprising generating a list of computational resources by querying a portion of the network** ( page 4 col 1 lines 24-25, “it is responsible for querying MDS to obtain resource information and for caching this information in local memory”)

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As per claim 7, Liu discloses:

*- in a network, sending, by a first service, a request for a list of one or more computational resources that are available for computing a task; responding, by a second service, to the request by collecting information on computational resources; sending a list of available computational resources* ( page 2 col 1 lines 32-36, “The resource selector locates sets of resources that meet user requirements, evaluates them based on specified performance model and mapping strategies, and returns a suitable collection of resources, if any are available.”) locating resources based on user request is the first service and returning the suitable collection of resources is the second service.

*- receiving a selected computational resource for reservation* ( page 3 col 2 lines 19-27, “The algorithm repeatedly removes the “best” resource remaining..... that satisfies the user’s request”)

However Liu does not specifically disclose, *sending a reservation number for the selection.*

On the other hand Buyya discloses:

*- reserving the selected computational resource and sending reservation number of the selected computational resource if the selected computational resource is available for computing the task* ( page 3 col 2 lines 19-23, “the user can negotiate for resources in the grid and find out if the job can be performed. The system can employ resource reservation or a trading technique in order to identify suitable resources”)

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Therefore, it would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Buyya into the method of Liu to have a reservation number for the selected resources. The modification would have been obvious because one of the ordinary skills of the art would identify the selected reserved resources for better resource allocation and management over the network.

Neither Liu nor Buyya specifically disclose the claimed, *sending the request to a different portion of the network if computational resources are unavailable*.

On the other hand Allen discloses:

- *sending the request to a second service if the first service has no information on available computational resources* ( page 2 col 1 lines 8-10, “security, resource discovery, and resource access and provides new resource locator and migrator services.” And page 5 col 2 lines 25-28, “One set of thorns provides a migration module for any Cactus application, which allows a user to transfer the simulation state by a checkpoint file or checkpoint stream from one resource to the next.”)

Therefore, it would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Allen into the combined method of Buyya and Liu to send request in different portion of the network for available resources. The modification would have been obvious because one of the ordinary skills of the art would find additional resources to compute the assigned task if it's not available in the primary resources.

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Claims 8 - 11 have the same claim limitation of claims 2 - 5 above. They are therefore rejected under the same rational.

As per claim 12, the rejection of claim 7 incorporates and further Buyya discloses:

**- wherein the second service has a stored relation to the first service** ( page 2 col 3 lines 19-24, "it is possible to run multiple instances of the same client at different locations. That means the experiment can be started on one machine, monitored on another machine by the same or different user") running multiple instances of the client in different location means having a stored relation between different services.

As per claim 13, the rejection of claim 11 incorporates and further Liu discloses:

**- wherein the first service executes instructions on a first computer system and the computational resources managed by the first service comprise a first set of computational resources located on the first computer system** ( page 2 col 1 lines 26-36, "Within this framework..... returns a suitable collection of resources, if any are available.") the framework is one computing environment and executes and manages the resources in the same environment.

As per claim 14, the rejection of claim 13 incorporates and further Liu discloses:

**- wherein a third service has a stored relation with the first service, the third service executes instructions on a second computer system, and the computational resources that are described by information accessible to the first service further comprise a second set of computational resources that are described by information accessible to the third service** ( page 8 col 1 lines 25-34 and col 2 lines 1-13)

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As per claim 15, Liu discloses:

*- a first computer system having a first set of one or more computational resources and configured to execute instructions of a first service; and a second computer system configured to execute instructions of a second service, the first service configured to: respond to a request for a list of computational resources for computing a task by collecting information on at least the first set of one or more computational resources; send a list comprising a subset of the first set of the one or more computational resources ( page 2 col 1 lines 32-36, “The resource selector locates sets of resources that meet user requirements, evaluates them based on specified performance model and mapping strategies, and returns a suitable collection of resources, if any are available.”) locating resources based on user request is the first service and returning the suitable collection of resources is the second service.*

*- receive a selection of a computational resource for reservation ( page 3 col 2 lines 19-27, “The algorithm repeatedly removes the “best” resource remaining..... that satisfies the user’s request”)*

However Liu does not specifically disclose, *sending a reservation number for the selection.*

On the other hand Buyya discloses:

*- reserve the selection and send an address of the selection if the selection of the computational resource is available for computing the task ( page 3 col 2 lines 19-23, “the user*

can negotiate for resources in the grid and find out if the job can be performed. The system can employ resource reservation or a trading technique in order to identify suitable resources”)

Therefore, it would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Buyya into the method of Liu to have a reservation number for the selected resources. The modification would have been obvious because one of the ordinary skills of the art would want identify the selected reserved resources for better resource allocation and management over the network.

Neither Liu nor Buyya specifically disclose the claimed, *sending the request to a different portion of the network if computational resources are unavailable.*

On the other hand Allen discloses:

- *send the request to the second service if computational resources are unavailable for computing the task* ( page 2 col 1 lines 8-10, “security, resource discovery, and resource access and provides new resource locator and migrator services.” And page 5 col 2 lines 25-28, “One set of thorns provides a migration module for any Cactus application, which allows a user to transfer the simulation state by a checkpoint file or checkpoint stream from one resource to the next.”) new resource is the second service or resource.

Therefore, it would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Allen into the combined method of Buyya and Liu to send request in different portion of the network for available resources. The modification would have been obvious because one of the ordinary skills of the art would find additional resources to compute the assigned task if it’s not available in the primary resources.

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Claim 16 has the same claim limitations of claims 14 above. Therefore it is rejected under the same rational.

Claims 17 - 20 have the same claim limitations of claims 3 - 5 above. They are therefore rejected under the same rational.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

TITLE: "Design and Evaluation of a Resource Selection Framework for Grid Applications" by Chuang Liu; Proceedings of the 11 th IEEE International Symposium on High Performance Distributed Computing HPDC-11 2002 (HPDC'02)

TITLE: Nimrod/G: An Architecture for a Resource Management and Scheduling System in a Global Computational Grid; Rajkumar Buyya; IEEE Computer Society Press, USA, 2000.

TITLE: The Cactus Worm: Experiments With Dynamic Resource Discovery and Allocation In A Grid Environment; Gabrielle Allen; The International Journal of High Performance Computing Applications, Volume 15, No. 4, Winter 2001

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abdullah-Al Kawsar whose telephone number is 571-270-3169.

The examiner can normally be reached on 7:30am to 5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chameli Das can be reached on 571-272-3696. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AK



**CHAMELI DAS**  
**SUPERVISORY PATENT EXAMINER**

7/17/07